

4.1.2. DATA MANAGEMENT

During 1993, the CAMS operated 98.15% of the time. CAMS gathers data from sensors that operate continuously at each of the four CMDL observatories. The CAMS performance was monitored by comparing the number of data files recorded against those expected for the year. In CAMS, there are data files regularly recorded 12 or 24 times a day. In Tables 4.7a and 4.7b, the hourly solar radiation file was used to monitor the ASR CAMS. The

hourly CO₂ data files were used for the CO₂ CAMS. The hourly-average meteorological data file was used for the MO3 CAMS.

Due to the remoteness of the observatories, power outages are common and are the main reason for data loss. Hardware failure is another reason for data loss. During 1993, BRW had two boards fail plus the CO₂ analyzer went down, MLO had three boards and two power supplies fail, SMO had two boards fail, and SPO had one board and one power supply fail.

TABLE 4.7a. CMDL CAMS Operations Summary, 1993

| Individual CAMS | Expected No. of Blocks 1993 | Percent Data Capture and [Blocks Missing] | | | |
|-----------------|-----------------------------|---|--------------|-------------|--------------|
| | | BRW | MLO | SMO | SPO |
| ASR | 8760* | 99.49% [45] | 98.04% [172] | 99.94% [5] | 99.40% [46] |
| CO2 | 8396 | 87.49% [1050] | 99.83% [14] | 99.65% [29] | 98.75% [105] |
| MO3 | 4380† | 99.45% [24] | 98.56% [53] | 99.38% [27] | 99.75% [11] |
| Total | 21536‡ | 94.80% [1119] | 98.85% [239] | 99.72% [61] | 99.21% [162] |

*The expected number of ASR blocks from SPO is 7680.

†The expected number of MO3 blocks from MLO is 3672.

‡The expected total number of blocks from MLO is 20828; the expected total number of blocks from SPO is 20456.

TABLE 4.7b. Number of Blocks of CAMS Data Expected and Blocks Recorded in 1993

| Block Type | Description | BRW | | MLO | | SMO | | SPO | |
|------------|---|----------|----------|----------|----------|----------|----------|----------|----------|
| | | Expected | Recorded | Expected | Recorded | Expected | Recorded | Expected | Recorded |
| A | Hourly aerosol data | 2190 | 2181 | 2190 | 2148 | 2190 | 2187 | 2190 | 1907 |
| B | Secondary aerosol data* | Variable | 0 | Variable | 1344 | Variable | 2189 | Variable | 0 |
| C | Hourly CO ₂ data† | 8396 | 7346 | 8396 | 8382 | 8396 | 8367 | 8396 | 8291 |
| D | Daily CO ₂ data | 365 | 325 | 365 | 365 | 365 | 370 | 365 | 369 |
| E | Hourly CO ₂ calibration data | 364 | 374 | 364 | 361 | 364 | 366 | 364 | 386 |
| F | CO ₂ calibration report | 52 | 53 | 52 | 52 | 52 | 53 | 52 | 58 |
| H | Daily aerosol data | 365 | 366 | 365 | 361 | 365 | 364 | 365 | 345 |
| I | Meteorological calibration | 365 | 360 | 305 | 303 | 365 | 364 | 365 | 365 |
| M | Hourly meteorological data | 4380 | 4356 | 3672 | 3619 | 4380 | 4353 | 4380 | 4369 |
| N | Surface ozone calibration | 52 | 56 | 45 | 34 | 52 | 5 | 0 | 0 |
| O | Daily surface ozone data | 365 | 365 | 305 | 300 | 365 | 365 | 365 | 368 |
| S | Hourly solar radiation data | 8760 | 8715 | 8760 | 8588 | 8760 | 8755 | 7680 | 7634 |
| T | Daily solar radiation data | 365 | 363 | 365 | 358 | 365 | 365 | 320 | 317 |
| W | Daily meteorological data | 365 | 364 | 305 | 301 | 365 | 365 | 365 | 368 |

*Nominal block count equal to total hours in year less 52 7-hour calibration periods.

†Nominal block count equal to 52 7-hour calibration periods.